

I claim:

1. A tomato plant, tomato fruits, seeds, plant parts and progeny thereof having reduced fruit polygalacturonase enzyme activity compared to the wild type tomato plants wherein the reduced fruit polygalacturonase enzyme activity is caused by a non-transgenic mutation in a fruit polygalacturonase gene.
2. Food and food products incorporating a tomato fruit of claim 1.
3. Pollen from the tomato plant of claim 1.
4. A tomato plant having tomato fruits which soften slower post harvest compared to wild type tomato fruits due to an altered polygalacturonase enzyme.
5. Tomato fruits, seeds, plant parts and progeny of the tomato plant of claim 4.
6. Pollen from the tomato plant of claim 4.
7. Food and food products incorporating a tomato fruit of claim 4.
8. The tomato plant of claim 4 having a non-transgenic mutation in a fruit polygalacturonase gene.
9. Tomato fruits, seeds, plant parts and progeny of the tomato plant of claim 8.
10. Pollen from the tomato plant of claim 8.
11. Food and food products incorporating a tomato of claim 8.
12. An endogenous fruit polygalacturonase gene having substantial homology to SEQ. I.D. No. 1 and having a non-transgenic mutation within the endogenous fruit polygalacturonase gene.
13. The endogenous fruit polygalacturonase gene of claim 12 wherein the non-transgenic mutation occurs around nucleotide 1969.
14. A tomato plant containing the endogenous fruit polygalacturonase gene of claim 13.

15. Tomato fruits, seeds, pollen, plant parts, and progeny of the tomato plant of claim 14.
16. Food and food products incorporating the fruit of the tomato plant of claim 14.
17. The endogenous fruit polygalacturonase gene of claim 12 wherein the non-
5 transgenic mutation creates a change in at least amino acid 178 of the fruit polygalacturonase enzyme expressed from the fruit polygalacturonase gene.
18. A polygalacturonase enzyme expressed from the endogenous fruit polygalacturonase gene of claim 17.
19. The polygalacturonase enzyme of claim 18 having an arginine at amino acid
10 178.
20. The endogenous fruit polygalacturonase gene of claim 12 wherein the non- transgenic mutation occurs around nucleotide 2940.
21. A tomato plant containing the endogenous fruit polygalacturonase gene of claim 20.
- 15 22. Tomato fruits, seeds, pollen, plant parts, and progeny of the tomato plant of claim 21.
23. Food and food products incorporating the fruit of the tomato plant of claim 21.
24. The endogenous fruit polygalacturonase gene of claim 12 wherein the non- transgenic mutation creates a change in at least amino acid 252 of the fruit
20 polygalacturonase enzyme expressed from the fruit polygalacturonase gene.
25. A polygalacturonase enzyme expressed from the endogenous fruit polygalacturonase gene of claim 24.
26. The polygalacturonase enzyme of claim 25 having a glutamine at amino acid
252.

27. A tomato plant having reduced fruit polygalacturonase enzyme activity compared to the wild type tomato plants created by the steps of:
- a. obtaining plant material from a parent tomato plant;
 - b. inducing at least one mutation in at least one copy of a fruit
- 5 polygalacturonase gene of the plant material by treating the plant material with a mutagen to create mutagenized plant material;
- c. culturing the mutagenized plant material to produce progeny tomato plants;
 - d. analyzing progeny tomato plants to detect at least one mutation in at
- 10 least one copy of a fruit polygalacturonase gene;
- e. selecting progeny tomato plants that have reduced fruit polygalacturonase enzyme activity compared to the parent tomato plant; and
 - f. repeating the cycle of culturing the progeny tomato plants to produce additional progeny plants having reduced fruit polygalacturonase enzyme activity.
- 15 28. The method of claim 27 wherein the plant material is selected from the group consisting of seeds, pollen, plant cells, or plant tissue.
29. The method of claim 27 wherein the mutagen is ethyl methanesulfonate.
30. The method of claim 29 wherein the concentration of ethyl methanesulfonate used is from about 0.4 to about 1.2%.
- 20 31. The tomato plant of claim 27 wherein the steps to create the tomato plant further included analyzing the progeny tomato plants by
- a. isolating genomic DNA from the progeny tomato plants; and

b. amplifying segments of the polygalacturonase gene in the isolated genomic DNA using primers specific to the polygalacturonase gene or to the DNA sequences adjacent to the polygalacturonase gene.

32. The tomato plant of claim 31 wherein at least one primer has a sequence
5 substantially homologous to a sequence as shown in the group consisting of SEQ. I.D.
Nos. 3 through 46.
33. Tomato fruit, seeds, pollen, plant parts or progeny of the tomato plant of claim
27.
34. Food and food products incorporating the fruit of a tomato plant of claim 27.